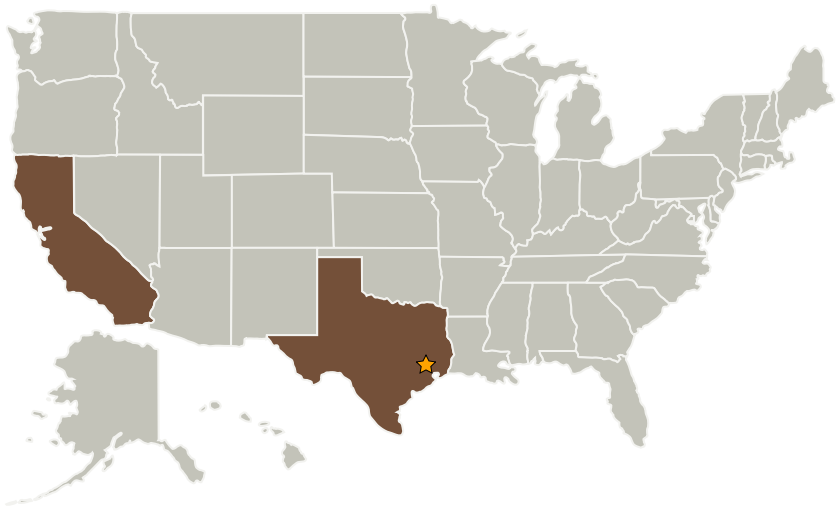
Adaptive Intelligent Ventilation Noise Control, Phase I

Completed Technology Project (2006 - 2006)

Project Introduction

To address NASA needs for quiet crew volumes in a space habitat, Physical Optics Corporation (POC) proposes to develop a new Adaptive Intelligent Ventilation Noise Control (AIVNC) system to reduce acoustic noise and vibration inside the crew living quarters. The proposed AIVNC is based on multifrequency active patches as a thin-skin-type actuator inside the ventilation system, and an intelligent adapting module instantly and continuously suppresses broadband noise in crew rest areas. The AIVNC active adapting module provides actuation signals to the multifrequency active patches by means of real-time intelligent adaptation to time-varying noise sources. The AIVNC multiple-modal actuation array targeting different frequency ranges enables users to perform fast active adaptation for acoustic noise suppression in a space habitat with an easy retrofit capability. In Phase I POC will demonstrate both the feasibility of AIVNC by testing active actuation patches, and an intelligent adapting model including an optimized system configuration and methodology. In Phase II POC plans to implement AIVNC into a fast, compact, standalone board with a complete actuator subsystem for precise acoustical control.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Johnson Space Center (JSC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★Johnson Space Center(JSC)	Lead Organization	NASA Center	Houston, Texas
Physical Optics Corporation	Supporting Organization	Industry	Torrance, California

Primary U.S. Work Locations	
California	Texas

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.4 Aeroacoustics